

Pima County, Arizona Flood Control District



- Bank Stabilization
- Detention Basins
- Environmental Restoration
- Flood Warning
- Public Safety Awareness
- Riparian Habitat
- River Parks

Annual Report
2001/2002

Pima County Flood Control District
Annual Report
Fiscal Year 2001/2002



Prepared by
Pima County Flood Control District
201 North Stone Avenue
Tucson, Arizona 85701

April 2003

OFFICE LOCATIONS

PIMA COUNTY FLOOD CONTROL DISTRICT

Public Works Building
201 North Stone Avenue, 4th Floor
Tucson, Arizona 87501-1215

Water Resources Division
Floodplain Management Division
(520) 740-6350

Flood Control Engineering Division
(520) 740-6371

PIMA COUNTY DEPARTMENT OF TRANSPORTATION

Public Works Building
201 North Stone Avenue
Tucson, Arizona 85701-1215

Director's Office
(520) 740-6437

Administrative Services Division
(520) 740-6433

Technical Services Division
(520) 740-6670

Mission Road Office
1313 South Mission Road
Tucson, Arizona 85713

Field Engineering Division
(520) 740-2635

Operations Division
(520) 740-2639

TABLE OF CONTENTS

- Flood Control District Administration, 2001/2002 4
- Message from the Chief Engineer 5
- District Finances 6
- Capital Improvement Project Expenditures 7
- Capital Improvement Projects Map 8
- Financial Highlights 10
- District Overview 12
- Establishment of the District 12
- Goals and Objectives 12
- District Organization 13
- District Activities 14
- Service Programs 14
- Capital Improvement Programs 15
- Management Programs 17
- Coordination with Other Agencies 20

FLOOD CONTROL DISTRICT ADMINISTRATION, 2001/2002

BOARD OF DIRECTORS (BOARD OF SUPERVISORS)

Ann Day, District 1
Dan Eckstrom, District 2
Sharon Bronson, Chairperson, District 3
Raymond J. Carroll, District 4
Richard Elías, District 5

FLOOD CONTROL DISTRICT ADVISORY COMMITTEE

Nick Bokaie, Oro Valley
Paul Cella, District 4
Robert Condit, Marana
Mike Zeller, Chair, City of Tucson
Antonio Figueroa, City of Tucson
Vacant, District 3
Herb Osborn, City of Tucson
Richard Salaz, City of South Tucson
Phil Pearthree, 2nd Vice Chair, District 5
Doug Shakel, Vice Chair, District 1
Vacant, District 2
Vacant, Sahuarita

GENERAL MANAGER (COUNTY ADMINISTRATOR)

C. H. Huckelberry

PUBLIC WORKS DIRECTOR

John M. Bernal

CHIEF ENGINEER

Kurt Weinrich

DEPUTY DIRECTOR, FLOOD CONTROL DISTRICT

Suzanne Shields

MESSAGE FROM THE CHIEF ENGINEER

On behalf of the Board of Directors of Pima County Flood Control District, I am pleased to present the District's Annual Report for Fiscal Year 2001/2002.

In the past year, the District has continued in the best tradition of serving the community by providing comprehensive flood protection programs, floodplain management services and riparian habitat preservation programs. A few highlights of the District's activities in FY 2001/2002 include:



- In cooperation with the Natural Resources Conservation Service, construction began in November 2001 on 1.5 miles of bank protection along the Santa Cruz River between Grant Road and Ft. Lowell. When completed, this \$9 million improvement will protect the I-10/Miracle Mile interchange, Arizona Department of Transportation maintenance yard, University of Arizona Agricultural Research Center, Tucson Electric transmission line, Tucson Water mainlines, residences on the west bank and other critical utility infrastructure.
- The restoration element of the Ajo Detention Basin, involving 20 acres of wetlands and a seven-acre lake, was constructed. The project was publicly dedicated as the *Ed Pastor Kino Environmental Restoration Project* on May 29, 2002, in recognition of U.S. Representative Ed Pastor's guidance, support and many contributions that helped make the project's success possible.
- Bank protection and box culvert improvements were completed on Green Valley Drainageway #9, reducing flood risk to adjacent property owners.
- In cooperation with the U.S. Army Corps of Engineers, three riverine and environmental feasibility studies are being conducted on the Santa Cruz and Rillito river systems. These studies will provide master plans for management and restoration of our major river systems.
- During 2001/2002, the Board of Directors established a Water Resources Division in the Flood Control District. Responsibilities of the new division include riparian habitat protection, floodprone land acquisition, water resources management and environmental restoration functions.
- The District contributed water resources and riparian preservation and restoration elements to the Sonoran Desert Conservation Plan and Conservation Land Use System which were adopted by Pima County in FY 2001/2002.
- Each month, staff assisted an average of 486 counter customers, issued an average of 44 Floodplain Use Permits, and investigated an average of 19 drainage complaints. In addition, an average 700 Flood Hazard Information Sheets were completed.

I believe that the District efforts in FY 2001/2002 made a significant contribution toward minimizing flood and erosion hazards for Pima County residents and their property. I hope you'll take a closer look at this year's annual report for more details on the District's many flood control activities. This and previous Annual Reports are available on the District Website.

A handwritten signature in black ink, appearing to read 'K. Weinrich'.

Kurt Weinrich, P.E.
Director, Department of Transportation
and Flood Control District

DISTRICT FINANCES

Revenues

Although the District receives assistance from state and federal agencies to construct major capital facilities, most of the District's funding is generated from the property tax levy, along with general obligation bond sales authorized by the electorate.

Information on the District levy rate is shown in the table at right.

United States Army Corps of Engineers (USACOE)

In addition to direct cash received from the federal government, the District received \$3,260,000 in in-kind service from the USACOE for the following projects under our cost share financial agreement:

Agua Caliente Park Restoration	\$350,000
Arroyo Chico	520,000
Paseo de las Iglesias	500,000
El Rio Antiguo	410,000
Rillito/Swan Wetlands	910,000
Tres Rios del Nort	570,000
TOTAL	\$3,260,000

Expenditures

The table on the following page provides information on capital project expenditures for FY 2001/02. Project numbers shown in the table correspond to the projects shown on the map on pages 8 and 9. The remainder of District expenditures goes toward debt services and operating expenses, which include funds allocated for maintenance of flood control structures, floodplain management, planning, and administration activities. A detailed breakdown of the District's finances is provided on pages 10 and 11.

Flood Control District Tax Levy Rate 1981 to 2002		
Fiscal Year Ending	Levy Rate*	Tax Revenue**
1981	0.5143	\$4,637,000
1982	0.4683	\$5,342,000
1983	0.5072	\$6,882,000
1984	0.4739	\$7,652,000
1985	0.5269	\$9,243,000
1986	0.5102	\$9,969,000
1987	0.5346	\$11,713,000
1988	0.7630	\$17,272,000
1989	0.5592	\$13,730,000
1990	0.5985	\$14,663,000
1991	0.5985	\$14,058,000
1992	0.5871	\$13,689,000
1993	0.5871	\$13,767,000
1994	0.5398	\$12,678,000
1995	0.4623	\$11,379,000
1996	0.3596	\$9,368,000
1997	0.3596	\$9,467,000
1998	0.3296	\$10,392,000
1999	0.3246	\$10,411,000
2000	0.3046	\$10,327,151
2001	0.3046	\$10,414,427
2002	0.3546	\$13,713,102

* Per \$100 assessed valuation

** Unaudited

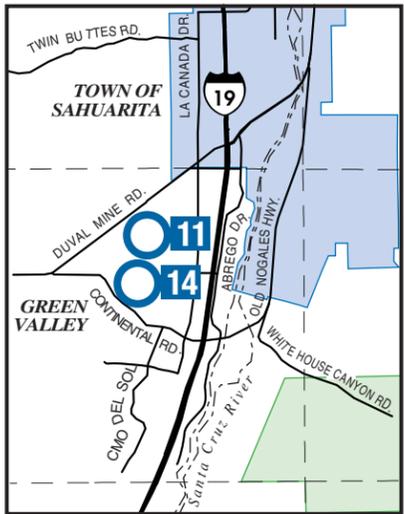
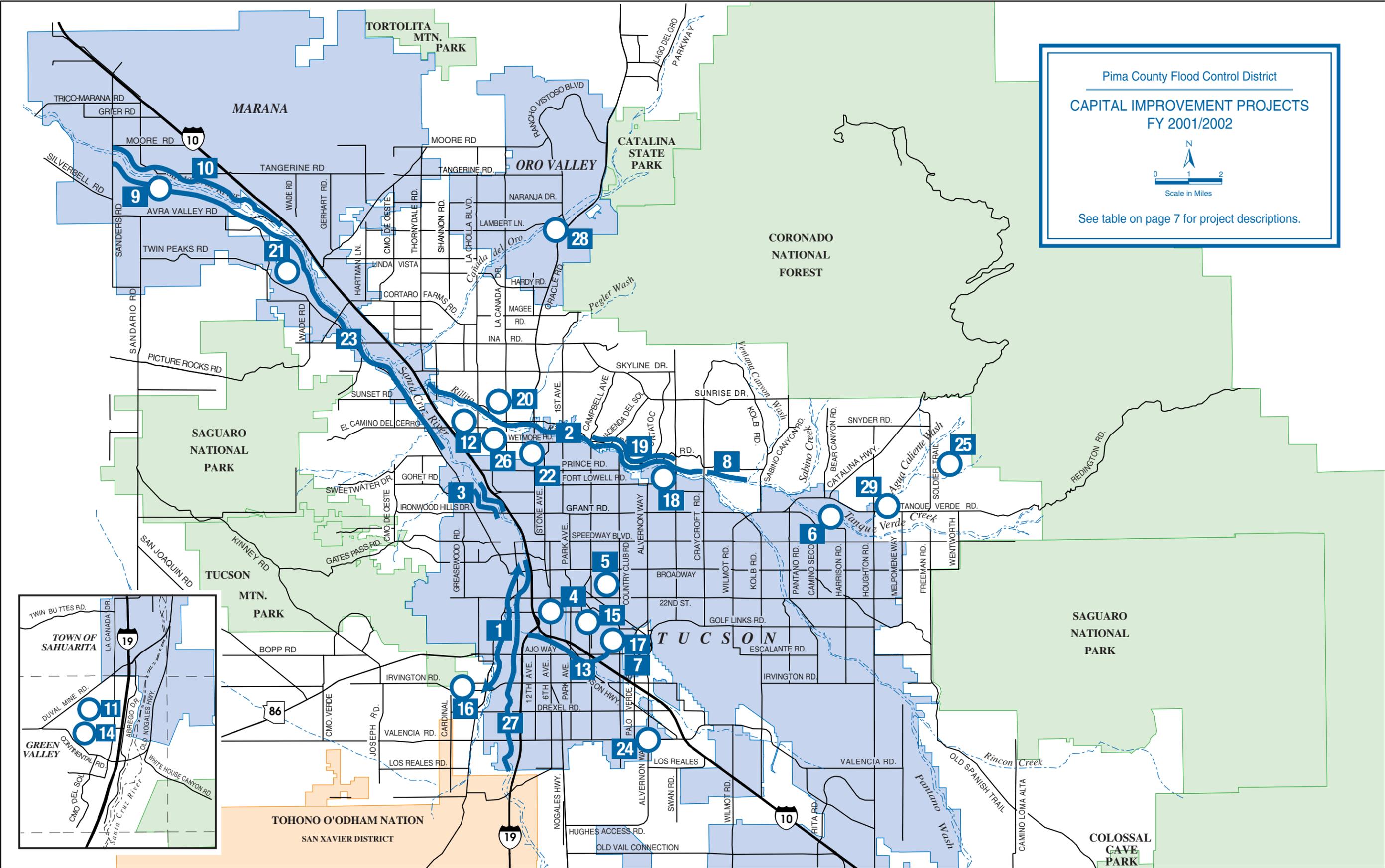
CAPITAL IMPROVEMENTS PROGRAM
Project Specific Expenditures
Fiscal Year Ending June 30, 2002

Project	Planning	Design	ROW Acquisition	Construction Cost	Other	Project Total
1 Santa Cruz River Study	0	16,617	0	0	0	16,617
2 Rillito Creek Bank Stabilization (River Park)	64,119	0	3,102	378	5,156	72,755
3 Santa Cruz River Bank Stabilization, Grant Rd. to Fort Lowell Rd.	39,087	264,659	56,857	5,014,890	155,063	5,530,556
4 City of South Tucson	0	0	0	275,000	0	275,000
5 Arroyo Chico Detention Basin	153,090	175,947	420,400	5,437	13,635	768,509
6 Tanque Verde Creek at Castle Rock	0	0	0	94	0	94
7 Ajo Detention Basin Expansion	4,801	1,977	0	2,838	7,873	17,489
8 Tanque Verde Creek, Craycroft Rd. to Sabino Canyon Rd.	3,082	13,418	195	0	1,412	18,107
9 Northwest Replenishment Project	24,719	9,460	0	464,754	26,416	525,349
10 Lower Santa Cruz Flood Control Levee	3,279	217	2,660	994,341	4,147	1,004,644
11 Green Valley Drainageway #9	0	2,073	1,259	646,678	20,773	670,783
12 Shannon Road: Palmdale Subdivision	595	2,153	0	0	0	2,748
13 Tucson Diversion Channel	0	796	0	0	0	796
14 Continental Vista Erosion Protection	3,146	132,193	2,774	444	395	138,952
15 Mission View Wash	0	20,445	0	0	0	20,445
16 Holladay/Forrest Drainage	1,915	81,012	3,004	74	177	86,182
17 Ajo Detention Basin-Wetlands	497,509	20,617	0	28,635	3,606	550,367
18 Rillito Creek/Swan Wetlands	5,989	162	0	0	406	6,557
19 Rillito Creek Environmental Restoration (El Rio Antiguo)	255,295	225,600	6,167	2,165	15,989	505,216
20 Rillito Creek Linear Park at Casas Adobes Wash	570	980	0	0	0	1,550
21 Cortaro Mesquite Bosque	12,802	23,397	0	0	547	36,746
22 Fairview Limberlost Drainage Improvements	22	18,914	88,699	567,774	1,411	676,820
23 Tres Rios del Norte	200,980	6,772	6,635	130	11,990	226,507
24 City of Tucson Drainage Improvements	1,860	75,623	0	0	524	78,007
25 Agua Caliente Park Restoration	82,538	937	206	0	10,193	93,874
26 McClelland River Park	0	0	0	183,234	8	183,242
27 Paseo de Las Iglesias	318,441	48,293	4,696	251	2,244	373,925
28 Town of Oro Valley Drainage	53,850	0	0	0	137	53,987
29 Agua Caliente Wash at Tanque Verde Road	0	0	509	1,512	646	2,667
Floodprone Land Acquisition	25,395	25	1,574,184	1,828	5,527	1,606,959
TOTAL	1,753,084	1,142,287	2,171,347	8,190,457	288,275	13,545,450

Pima County Flood Control District
CAPITAL IMPROVEMENT PROJECTS
 FY 2001/2002

Scale in Miles

See table on page 7 for project descriptions.



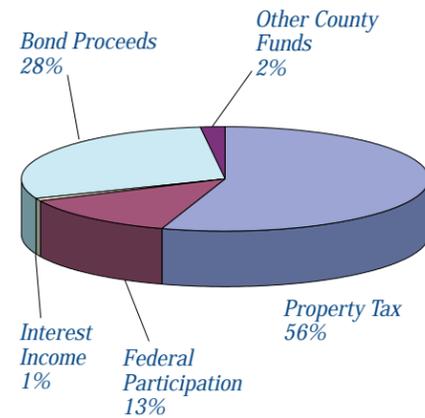
FINANCIAL HIGHLIGHTS FOR FISCAL YEAR 2001/2002

Revenues

Property Tax, Flood Control District	56%
Federal Participation	13%
Interest Income	1%
Bond Proceeds	28%
Other County Funds	2%

Total Revenue 100%

The primary source of revenue is the Flood Control District secondary property tax levy of \$0.3546 per \$100.00 of real property asset valuation. In 2001-02, the District received approximately \$13.7 million in tax levy revenue. Other local sources of revenue include revenues for capital improvement from the sale of general obligation (GO) bonds (\$6.7 million) and reimbursements for other County departments (\$0.4 million). Federal aid and Arizona state grants are an additional potential source of revenue, with the District receiving \$3.2 million in federal aid in FY 2001-02. Total revenue from all sources in FY 2001-02 was \$24.3 million.

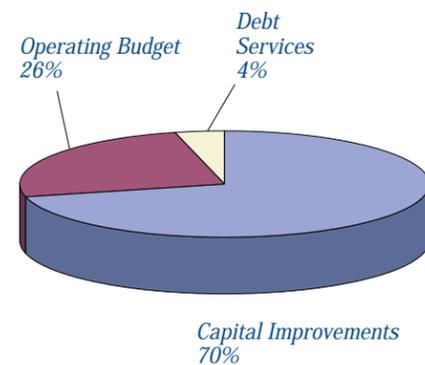


Expenditures

Capital Improvements	70%
Operating Budget	26%
Debt Service	4%

Total Expenditures 100%

For FY 2001-02, the total expenditures for the District was approximately \$19.8 million. The Capital Improvement Program expenditures of \$13.8 million in direct capital expenses. The annual operating budget for the District was approximately \$5.1 million. The other significant expenditure was \$0.9 million in debt service for flood control bonds.



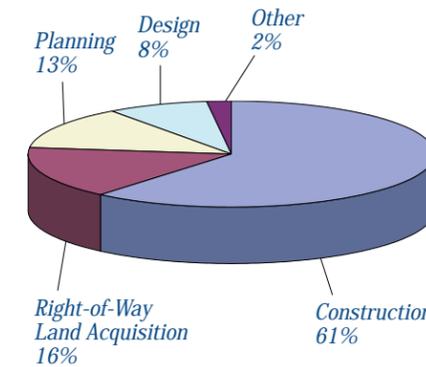
Breakdown of Expenditures

Capital Improvements

Planning	13%
Design	8%
ROW Acquisition & Improvements	16%
Construction	61%
Other	2%

Total Capital Improvements 100%

The expenditures for capital improvements include engineering service costs for planning and design; construction costs; right-of-way acquisition costs; and other costs such as costs to prepare new FEMA Flood Insurance Maps once a capital project is completed.

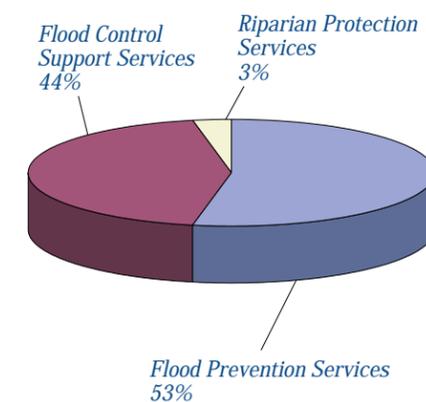


Operating Budget

Flood Control Support Services	44%
Flood Prevention Services	53%
Riparian Protection Services	3%

Total Operating Expenses 100%

The District's operating budget includes administrative, personnel, supply and service costs associated with the District's services for Flood Control Support, Flood Prevention and Riparian Protection. Flood Control Support Services include programs such as customer service, permits, public education, and financial management. Flood Prevention Services include maintenance, flood warning, emergency preparedness, and enforcement activities. Riparian Protection Services include the environmental restoration, water resources and riparian habitat management programs.



OVERVIEW OF THE DISTRICT

Establishment of the District

To comply with federal law, the State of Arizona passed the Floodplain Management Act of 1973. This act authorized Arizona counties to adopt rules and regulations concerning management of floodplain areas. The Arizona state legislature subsequently authorized flood control districts to levy taxes on real property to finance district operating expenses. The Pima County Board of Supervisors, which sits as the Pima County Flood Control District Board of Directors (Board), organized the Pima County Flood Control District on June 5, 1978. The District first became operational on July 1, 1978.

Provisions of state legislation also allow incorporated cities and towns within the county to undertake their own floodplain management duties and regulatory functions. In Pima County, the incorporated areas of the City of Tucson, the Town of Oro Valley and the Town of Marana have elected to assume floodplain management duties in their respective jurisdictions. The District is responsible for floodplain management activities for the remainder of unincorporated Pima County (with the exception of national forests, parks, monuments, and Indian Nations) and for the City of South Tucson and the Town of Sahuarita.

VISION

The District will continue to be a leader in providing quality flood protection and floodplain management services within Pima County.

MISSION

Pima County Flood Control District is a regional agency whose mission is to protect the health, safety, and welfare of Pima County residents by providing comprehensive flood protection programs and floodplain management services. These services emphasize fiscal responsibility, protection of natural resources, and a balanced multi-objective approach to managing regional watercourses, floodplains, and stormwater resources.

VALUE STATEMENT

The District is committed to the fair treatment of the general public and our employees, an open decision-making process, fostering the opportunity for employee contributions, improved quality of work through working in partnership, and consideration of environmental values along with economic benefits in our programs.

Goals and Objectives

The goals and objectives of the District represent both flood control and resource protection views and vary from traditional flood control approaches because of a multi-benefit public philosophy. The District recognizes that it is necessary and desirable to maintain a balanced relationship between human communities and the land and resources that sustain them. To that end, the following twelve specific policy goals and objectives have been adopted by the Board as part of the District's Floodplain and Erosion Hazard Management Ordinance:

- To minimize flood and erosion damages
- To meet or exceed state and federal requirements relating to floodplain management – thereby enabling Pima County residents to purchase low-cost flood insurance, to receive disaster relief, should the need

arise, and to seek residential and commercial real estate loans

- To establish minimum flood protection elevations and damage protection requirements for structures and other types of development, which may be vulnerable to flood and erosion damage
- To regulate encroachment and building development within areas subject to flooding or erosion, and to ensure that the flood-carrying capacity within the altered and/or relocated portion of any watercourse is maintained
- To encourage the most effective expenditures of public money for flood control projects

- To protect, preserve, and enhance groundwater recharge
- To minimize the need for rescue and relief efforts associated with flooding and erosion, usually undertaken at the expense of the general public
- To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, and streets located in regulatory floodplain and erosion hazard areas
- To help maintain a stable tax base by providing for the protection of regulatory floodplain and erosion hazard areas
- To inform the public when property is in a regulatory floodplain or erosion hazard area
- To ensure that those who occupy the areas within a regulatory floodplain and erosion hazard area assume responsibility for their actions
- To encourage the preservation of natural washes and enhance the riverine environment

District Organization

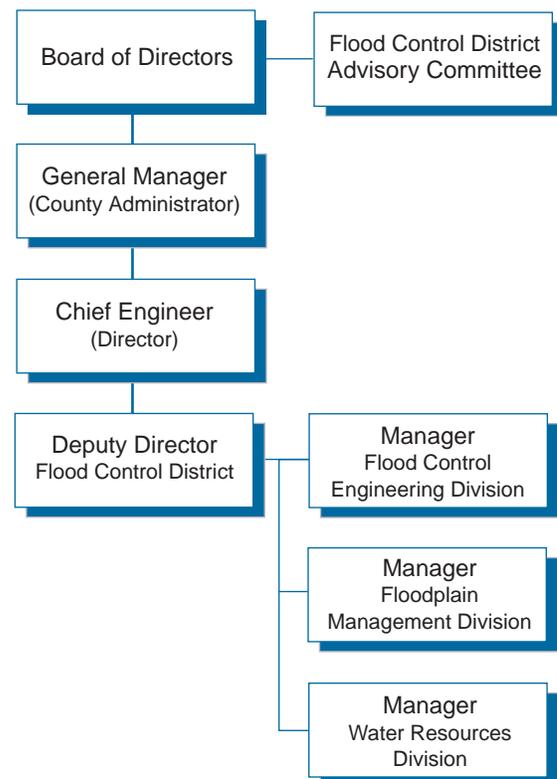
The District is organized into three main divisions based on the major functions of each group: 1) the Floodplain Management Division; 2) the Flood Control Engineering Division; and 3) the Water Resources Division. The District receives substantial support from other divisions within the Pima County Department of Transportation and Flood Control District (PCDOT/FCD). These include Administrative Support Services, Maintenance Operations, Field Engineering, Real Property, and Technical Services. Further assistance is received from other county departments, including Development Services, Department of Environmental Quality and the Pima County Attorney’s Office. The District pays for services rendered by PCDOT and other departments through interdepartmental fund transfers from the District to Pima County.

Although District employees are part of the Pima County Department of Transportation and Flood Control District, their positions are funded entirely from District revenues. The District funded 43 full-time equivalent (FTE) staff positions in FY 2001/02.

As noted, the Pima County Board of Supervisors, sitting as the Flood Control District Board of Directors, governs the Flood Control District. The Board also hears requests for variances and appeals to the Floodplain and Erosion Hazard Management Ordinance (FPMO). In 1988, the Board formed the Flood Control District Advisory Committee (FCDAC) to advise on flood-related matters and to increase public participation in the decision-making process. The 12-member FCDAC includes five members appointed by the Board (one for each Board

member), three representatives from the City of Tucson, and one representative each from the City of South Tucson, the towns of Marana, Oro Valley and Sahuarita. One position, in an ex-officio capacity, is available for appointment by the Tohono O’odham Nation.

District Organizational Chart



DISTRICT ACTIVITIES

SERVICE PROGRAMS

CUSTOMER SERVICE

Dynamic public outreach activities build upon the wealth of information created and gathered by staff throughout the years. Flood awareness, flood preparedness, and safety are major themes, along with groundwater recharge, watershed protection and riparian habitat conservation.

Public Information

Available in the lobby area of the District office are numerous free publications and brochures, along with a poster display documenting historical flood events and highlighting flood safety information. This display, along with real-life flood video presentations, is featured every year at the ten-day Pima County Fair. In 2001-02, the hands-on computer station at the fair allowed citizens to review their floodplain status on-line.

Public Education

Children are introduced to flooding and riparian issues by staff's annual participation in the Students Against Drunk Driving Conference and Earth Day for Kids. In



Flood Control District photo

STOP! Do Not Enter flooded streets and washes.

addition, the District continues its annual contract with Dr. Richard Wood to provide presentations on flooding and erosion issues at area elementary schools.

Special Seminars

In 2001-02, a seminar series for the manufactured home industry was provided to educate sellers and installers about the floodplain management permit process and elevation certificates.

Website

The District continues to update its informative Website at www.dot.co.pima.az.us/flood. In 2001-02, floodplain maps were placed on the site for easy access and use by realtors, lending and mortgage companies, and home owners/buyers.

Customer Service Training and Satisfaction Surveys

In 2001-02 both managers and staff took course work and hands-on training in customer services and customer services training. All counter customers were asked to complete a survey during a two-week period in January and February, 2002; 112 surveys were returned with an overall customer satisfaction rating of 96 percent.

Employee Training

Training in engineering fields in technical areas as well as on federal and state regulations is critical for providing quality services in flood control and other public services. As the following table shows during 2001-02, 16 District employees received training.

Employee Training 2001-02

Employees Trained	Training	Training Provider
1	National Flood Insurance Program	FEMA
2	Flood Hazard Mapping	FEMA
1	Flood Insurance Community Rating System	FEMA
2	Flood Elevation Building Certification	FEMA
3	Channel and Bank Protection Design	ADOT
3	Hydrology and Culvert Design	ADOT
4	Public Records Management	PCAO

INTERNAL BUSINESS PROCESSES

Upgrading the processes that go on behind the scenes serves to benefit the public by decreasing wait times and enhancing state-of-the-art data manipulation:

Drainage Maintenance Process Improvement

A program for computerized mapping of drainage complaint information was developed for use on the County's Intranet. The program will allow District staff as well as staff in Operations and Maintenance, and Community Relations, access to maps showing the location of all drainage complaints and the status of those complaints.

Orthophotography/Topography Project

Participating with PAG (Pima Association of Governments) and the USGS, the District secured digital topographic mapping and aerial photographs for 340 square miles of Black Wash, Upper Brawley Wash and the southeast area. These new products will be used to develop more accurate floodplain maps, develop basin master plans and refine the flood warning system.

Computer Design Innovation

The District has developed a computer aided drafting design (CADD) standard for the Department of Transportation and Flood Control. The Flood Control Engineering Division has already done this with the Request for Qualifications for Arroyo Chico Survey.

FINANCIAL MANAGEMENT

Capital Improvement Funding

The District has been successful in securing state and federal funding for capital improvement projects allowing the District to fund more improvements while using a smaller local tax rate. In 2001-02, the District received \$3,200,000 from the NRCS for channel improvements along the Santa Cruz River at Grant Road, as well as approximately \$3,300,000 funding assistance from the USACOE.

Improved Capital Project Tracking

Improvements were made to the tracking of project status and costs for all bond and nonbond capital improvement projects to proper financial and project management. As a result, more complete data are available over the Pima County Web page at www.co.pima.az.us/.

CAPITAL IMPROVEMENT PROGRAMS

STRUCTURAL IMPROVEMENTS

Structural capital improvement projects are intended to reduce flooding and erosion by designing and constructing improvements that will safely convey floodwater and protect channel banks from erosion. Structural projects are typically a solution in areas that have already been built-out, or where there is important infrastructure that needs to be protected.

Santa Cruz River Bank Stabilization, Grant Road to Ft. Lowell

Construction began on this \$9,000,000 flood control and bank stabilization project in the fall of 2001, and



Flood Control Design Engineering photo

Bank stabilization construction along a severely eroded reach of the Santa Cruz River from Grant Road to Ft. Lowell Road.

the project is now 85 percent complete. It includes 1.5 miles of bank protection and replacement of major trunk sewer lines and reclamation water lines.

Fairview/Limberlost Drainage Improvements

This is a joint project with the City of Tucson to implement a storm drain system that will reduce flooding of single family residences and manufactured homes



Flood Control Design Engineering photo

View through a precast box culvert for Fairview/Limberlost. Using precast minimizes disruption times during construction.

west of Fairview Avenue and south of Wetmore Road. Design was completed and construction is expected to be completed by November 2002.

Arroyo Chico Detention Basins

The Design Report for this USACOE project was completed in 2001-02. This \$27,000,000 flood control project will protect residents and businesses in downtown Tucson, removing 2,200 residences from the 100-year floodplain. The USACOE has begun final construction plans and specifications for construction to begin in 2002-03.

Green Valley Drainageway #9

In February 2002, the District completed construction improvements to reduce flood and erosion hazards along this drainageway. The project featured additional cells for the box culverts at Camino Portillo and Camino Holgado, as well as various types of bank protection based on adjacent improvements.

Continental Vista Erosion Protection

The district is designing improvements that will reduce the flooding and erosion hazards in several areas for the three major washes that cross Green Valley's Continental Vista Subdivision.

Ajo Detention Basin (Ed Pastor Kino Environmental Restoration Project)

Originally constructed in the 1960s by the USACOE, the Ajo Detention Basin has been reconfigured to incorporate environmental habitat restoration and flood control features. The restoration element of the project involves 20 acres of wetlands and a seven-acre lake. The lake will support habitat and supply water for irrigation needs at nearby Kino Sports Park. The project was publicly dedicated as



Flood Control Design Engineering photo

the *Ed Pastor Kino Environmental Restoration Project* on May 29, 2002, in recognition of U.S. Representative Ed Pastor's guidance, support and many contributions that helped make the project's success possible.

Mission View Wash

Preliminary design continues on this project which will include construction of a regional detention basin east of Park Avenue and south of 36th Street in order to mitigate downstream flooding.

Rillito/La Cholla River Park (formerly McClelland property)

In November 2002, the district completed construction of this project which includes river park improvements in an area east of La Cholla Boulevard.

Holladay/Forrest Drainage Improvements

Drainage improvements are needed to eliminate repeated flooding of homes in this neighborhood, located northwest of the intersection of Mission and Drexel Roads. The District has begun design of this project which will include a storm drain to carry flows to an existing drainageway along Mission Road.

ENVIRONMENTAL RESTORATION

Environmental Restoration capital improvement projects are intended to protect and/or enhance riparian habitat and promote groundwater recharge, utilizing a combination of constructing structural improvements and planting native habitat.

Paseo de las Iglesias, Tres Rios del Norte and El Rio Antiguo

These three environmental feasibility studies are being conducted in partnership with the USACOE on the Santa Cruz and Rillito River systems. Environmental and riparian objectives include developing a hydro-geomorphic model of the physical, biological and chemical function of wetlands. Existing conditions reports have been submitted to USACOE, and staff has



Photo courtesy of RECON/Woods

Area of potential ecosystem restoration along Rillito Creek.

conducted public group meetings for input in developing the design alternative.

Agua Caliente Aquatic Ecosystem Restoration Project

Working in partnership with the USACOE, this feasibility project for the Agua Caliente Park will allow the County to study the trade-offs, costs, and benefits of restoring ecosystems. Public education efforts have been coordinated with the Pima County Natural Resources, Parks and Recreation Department. District staff have established a Website and newsletter.

Rillito/Swan Wetlands

In conjunction with the USACOE, the District is preparing a feasibility study to determine the costs and benefits of developing wetlands and enhancing riparian habitat along a reach of the Rillito Creek. The Environmental Restoration Report is complete and staff is negotiating with the USACOE for the design of the recommended alternative.

Marana High Plains Effluent Recharge Project

This project is a two-year pilot to investigate the feasibility of using treated effluent to enhance riparian habitat while recharging the groundwater aquifer. Construction of the facility has been completed and recharge is expected to begin in summer 2003.

Bingham Cienega Natural Preserve Restoration

This project, completed in the fall of 2001, was a joint effort between the Arizona Water Protection Fund, The Nature Conservancy and the District, to restore 25 acres of historic sacaton grass and woodland tree habitat to former agricultural land along the San Pedro River. A final, comprehensive report was written with recommendations for future similar restoration efforts.

MANAGEMENT PROGRAMS

WATER RESOURCES AND RIPARIAN HABITAT MANAGEMENT PROGRAM

This program consists of activities intended to a) prevent existing flooding, erosion and riparian habitat loss problems from getting worse, and b) prevent the creation of new flooding, erosion and habitat loss problems, *by means other than constructing structural flood control improvements*. The District promotes and supports regional riparian restoration with the intent that it will result in some level of recovery of natural functions within riverine systems.

Sonoran Desert Conservation Plan

The Sonoran Desert Conservation Plan (SDCP) is a large scale initiative that seeks to address conservation of both cultural and natural resources in eastern Pima County. The plan contains six major elements: 1) ranch conservation; 2) historic and cultural preservation; 3) riparian restoration; 4) mountain parks; 5) conservation of habitat, biological resources and ecological corridors; and 6) critical and sensitive habitat preservation. Since December 1998, District staff has been closely involved with the riparian restoration element of the plan and



Ironwood tree.

has supported the work of the Science and Technical Advisory Team (STAT) and biological consultants hired to work on the SDCP.

The District provided flood control information and land use policies to integrate the SDCP into the 2001 Comprehensive Plan Update.

July 2001 through June 2002 SDCP reports, studies and activities:

- Groundwater Level Changes in the Tanque Verde Valley Report Update
- Special Elements Report
- Climate Variability in Pima County

- Report on Biological Values of the West Branch of the Santa Cruz River
- Groundwater Modeling in Arivaca
- Species Reestablishment Study
- Native Fish Protection along the Santa Cruz River
- Riparian Mapping
- Public Outreach

Revisions to Floodplain and Erosion Hazard Management and Riparian Ordinance

A detailed review of the current ordinance was completed with recommendations for updating floodplain management. District staff are preparing new language for the riparian habitat section and coordination between the riparian policies with the Environmentally Sensitive Land Ordinance.

- During 2001-02, three hydro/mesoriparian mitigation plans were approved by the Board of Supervisors. District staff reviewed ten subdivision plan and ten private property xeroriparian mitigation plans.

Floodprone Land Acquisition Program (FLAP)

The District purchased 821 acres (with two donations) totaling \$1,258,000, along the Santa Cruz, Santa Cruz West Branch, Black Wash, and Canada del Oro. The District facilitated Bureau of Reclamation land acquisition on Posta Quemada Wash. New acquisition criteria was developed by staff, linking FLAP with acquisition of riparian priority areas for the purpose of identifying critical properties for acquisition.

Mitigation Land Bank – Pima Pineapple Cactus

District staff prepared technical studies and coordinated with the Arizona Game and Fish Department and the United States Fish and Wildlife on technical issues.

FLOODPLAIN MANAGEMENT PROGRAM

The main responsibility for District staff in the Floodplain Management Program is to enforce provisions of the Pima County Floodplain and Erosion Hazard Management Ordinance (FHMO). This ordinance, prepared in accordance with the National Flood Insurance Program (NFIP), includes regulations and requirements designed to minimize flood damage and losses throughout the community. This important goal is accomplished largely through review and

issuance of Floodplain Use Permits, detailed site reviews for potential development, and investigation of drainage and flood-related complaints. Flood hazard information sheets provide a succinct listing of a parcel's floodplain status. Customers are assisted by phone, fax or in person at the counter.

Fiscal Year Statistics

A total of 25,386 customers were served in 2001-02 for an average of 2,116 customers per month. The services provided included:

- Issued an average of 44 Floodplain Use Permits per month
- Investigated an average of 19 drainage complaints per month
- Processed approximately 700 Flood Hazard Information Sheets per month
- Assisted an average of 468 customers at the counter per month

FLOOD WARNING AND EMERGENCY PREPAREDNESS

The Flood Warning Program encompasses the District's Automated Local Evaluation in Real Time Warning System (ALERT), which consists of approximately 74 automatic self-reporting precipitation gauges, 29 stream gauges,



ALERT precipitation station near Elephant Head, Green Valley.

4 weather stations, and 4 radio repeater stations. The system automatically transmits hydrometeorological data via radio telemetry to the District's base station and to the Tucson office of the National Weather Service (NWS). During storm events, District staff evaluate incoming data to monitor changing flood conditions. The NWS also uses

the information when issuing flash flood warnings and advisories. In addition to biannual maintenance on all sites, the following highlights occurred during 2001-02:

- Both hardware and software were upgraded on the ALERT computer, with training seminars given to appropriate staff.
- Ten new sites were installed in cooperation with the Arizona Department of Water Resources.

FLOOD INSURANCE PROGRAM

The District works in conjunction with the Federal Emergency Management Agency (FEMA) under the Flood Insurance Study Program (FIS) to identify floodprone areas and set insurance rates in flood hazard areas within the county. A key work product of this effort is a set of official maps call Flood Insurance Rate Maps (FIRMs). These maps show flood hazard zones and other relevant hydrological information. Federal, state, and local floodplain management regulations apply to development and other activities that take place in designated flood hazard zones.

FIRMs have been prepared for most of the major watercourses and many of the smaller watercourses within Pima County. These maps are revised periodically when structural improvements are implemented or when floodplain characteristics are altered due to

modifications to channel geometry, etc. The Floodplain Management Division is the local map repository for the FIRMs.

During 2001-02 the following work was performed by District staff:

- *Master Drainage Study for the San Xavier District.* The existing conditions report, Phase I, was completed.
- *Santa Cruz River Project from Grant Rd. to Ft. Lowell.* A Conditional Letter of Map Revision (CLOMR) was submitted to FEMA.
- *Rillito Creek, Santa Cruz to Craycroft Road.* Staff submitted the Rillito Creek Physical Map Revision to FEMA.
- *Lower Santa Cruz River Levee.* The Lower Santa Cruz Levee Maintenance Plan was completed, and a Letter of Map Revision (LOMR) was submitted to FEMA.
- *Annual Community Rating System (CRS).* The District has received a high community rating from the National Flood Insurance Program (NFIP) Community Rating System. This has resulted in a reduction in flood insurance costs of \$85 per year to individual home owners for an overall savings to the taxpayers of \$225,000.

COORDINATION WITH OTHER AGENCIES

PIMA COUNTY DEPARTMENT OF TRANSPORTATION

The District contracts with Pima County for services from divisions within the Department of Transportation:

- Field Engineering Division
- Maintenance Operations Division
- Real Property Division
- Technical Services Division
- Administrative Services Division

OTHER PIMA COUNTY DEPARTMENTS

The District cooperates with other Pima County Departments on various projects and exchanges information as needed:

- Public Works Department
- Development Services Department
- Wastewater Management Department (WWM)
- Department of Environmental Quality
- Natural Resources, Parks and Recreation Department
- County Attorney's Office
- Tucson-Pima County Office of Emergency Management
- Health Department
- Real Property

LOCAL GOVERNMENTS

The District has entered into intergovernmental agreements (IGAs) to provide specific flood control or floodplain management services to, or to jointly fund flood control activities with, the following:

- City of Tucson
- City of South Tucson
- Town of Oro Valley
- Town of Marana
- Town of Sahuarita

PIMA ASSOCIATION OF GOVERNMENTS (PAG)

PAG facilitates coordination among local government agencies, including the District, on environmental matters affecting the community.

STATE AGENCIES

The District coordinates activities with the following state agencies:

- Arizona Department of Water Resources (ADWR)
- Arizona Department of Environmental Quality (ADEQ)
- Arizona Game and Fish Department (AGFD)
- Arizona State Land Department

FEDERAL GOVERNMENT

Several federal agencies participate in local flood control projects, as listed below:

- U. S. Army Corps of Engineers (USACOE)
- Federal Emergency Management Agency (FEMA)
- Federal Highway Administration (FHWA)
- U. S. Bureau of Reclamation (USBR)
- U. S. Natural Resources Conservation Service (NRCS)
- National Weather Service (NWS)
- U. S. Geological Survey (USGS)
- U. S. Fish and Wildlife Service (USFWS)

NONGOVERNMENT ORGANIZATIONS

Other nongovernmental agencies that the District works with include:

- The Nature Conservancy (TNC)
- Cortaro-Marana Irrigation District (CMID)
- Central Arizona Water Conservation District (CAWCD)
- Metropolitan Domestic Water Improvement District (MDWID)
- University of Arizona (UA)



PIMA COUNTY BOARD OF SUPERVISORS

Sharon Bronson, Chair, District 3
Ann Day, District 1
Dan Eckstrom, District 2
Raymond J. Carroll, District 4
Richard Elías, District 5

County Administrator
C.H. Huckelberry



PIMA COUNTY FLOOD CONTROL DISTRICT

Flood Control District Advisory Committee

Nick Bokaie, Oro Valley
Paul Cella, District 4
Robert Condit, Marana
Mike Zeller, Chair, City of Tucson
Antonio Figueroa, City of Tucson
Vacant, District 3
Vacant, City of Tucson
Richard Salaz, City of South Tucson
Phil Pearthree, 2nd Vice Chair, District 5
Doug Shakel, Vice Chair, District 1
Vacant, District 2
Martin Roush, Sahuarita

Cover Photos
Stormy sky and cars in flooded street courtesy of RECON/Woods.
Detention basin and riparian environment Flood Control District photos.

Design and Production
by Pima County Graphic Services Department, Design Division.
4495-0403cam-1.5kHollis/PCReproduction